

LM213B

- 256 dot(W) x 64 dot(H) graphic and alpha-numeric display
- Built-in control LSI HD61830 type (see page 76)

MECHANICAL DATA (Nominal dimensions)

Module size 184W x 75H x 12D (max.) mm
 Effective display area 149.6W x 43H mm
 Number of dots 256W x 64H mm
 Dot size 0.51W x 0.51H mm
 Pitch 0.56W x 0.56H mm
 Weight about 150 g

ABSOLUTE MAXIMUM RATINGS

	min.	max.
Power supply for logic ($V_{DD}-V_{SS}$)	0	7.0 V
Power supply for LCD drive ($V_{DD}-V_{EE}$)	0	15.0 V
Input voltage (V_i)	V_{SS}	V_{DD} V
Operating temperature (T_a)	0	40°C
Storage temperature (T_{stg})	-20	60°C

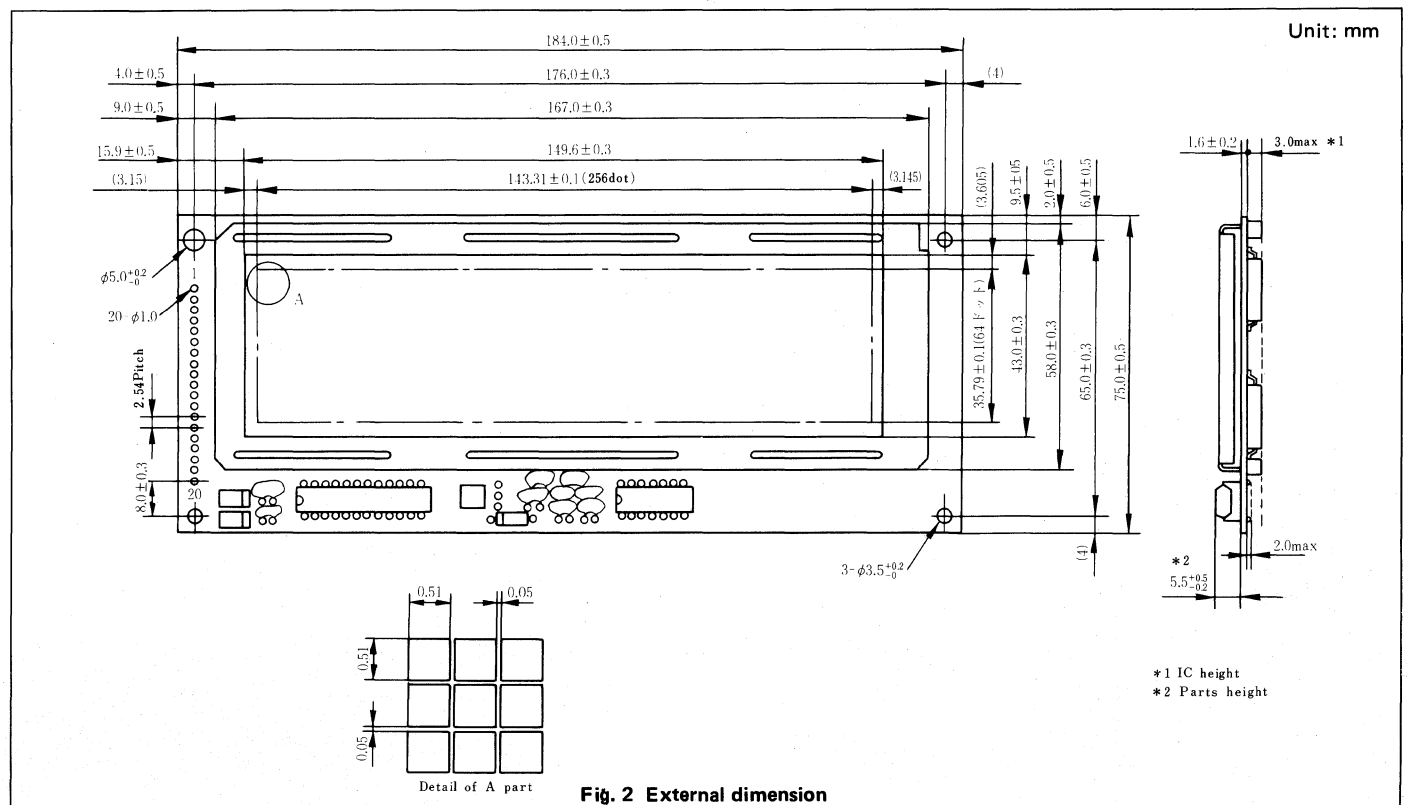
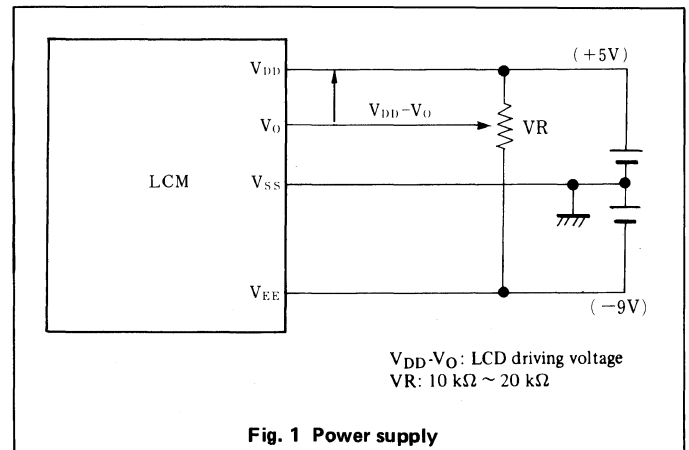
ELECTRICAL CHARACTERISTICS

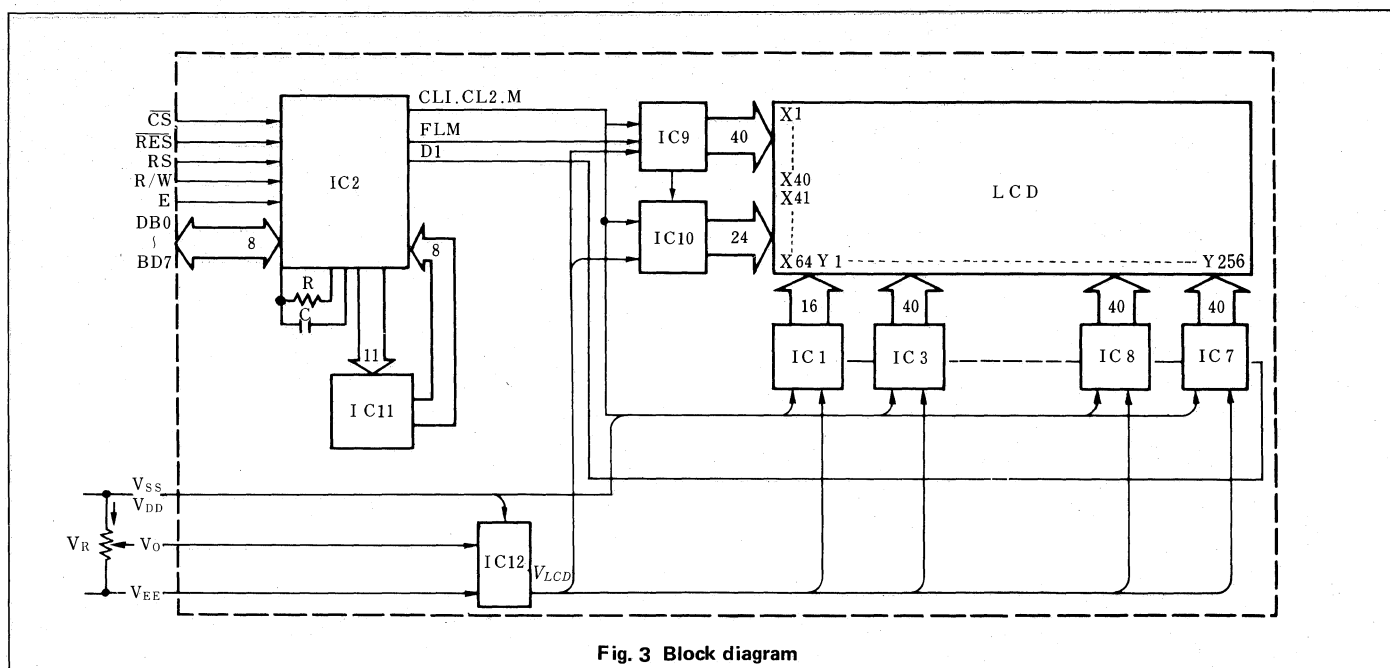
$T_a = 25^\circ\text{C}$, $V_{DD} = 5.0 \text{ V} \pm 0.25 \text{ V}$,
 $V_{EE} = -9.0 \text{ V} \begin{smallmatrix} +5\% \\ -10\% \end{smallmatrix}$
 Operating internal frequency F_{CP1} 500 kHz
 F_{CP2} 1.2 MHz
 Dissipation current 80 mW
 Power supply for LCD drive (Recommended) ($V_{DD} - V_O$)
 $Du=1/64$
 at $T_a = 0^\circ\text{C}$ 13.2 V typ.
 at $T_a = 25^\circ\text{C}$ 11.7 V typ.
 at $T_a = 40^\circ\text{C}$ 10.2 V typ.

OPTICAL DATA See page 8

INTERFACE TABLE

Pin No.	Symbol	Pin No.	Symbol
1	V_{SS} (GND)	11	DB4
2	V_{DD} (5 V)	12	DB5
3	V_O	13	DB6
4	RS	14	DB7
5	R/W	15	$\overline{CS}$
6	E	16	$\overline{RES}$
7	DB0	17	$V_{EE} (-9 \text{ V})$
8	DB1	18	N.C
9	DB2	19	N.C
10	DB3	20	N.C





TIMING CHARACTERISTICS

Item	Symbol	min.	typ.	max.	Unit
Cycle time of 'E'	t _{CYC}	1.0	—	—	μs
Pulse width of 'E'	H level	t _{WEH}	0.45	—	μs
	L level	t _{WEL}	0.45	—	μs
Pulse raise time of 'E'	t _{Er}	—	—	25	ns
Pulse fall time of 'E'	t _{Ef}	—	—	25	ns
Set up time of CS, R/W, RS	t _{AS}	140	—	—	ns
Set up time of Input Data	t _{DIS}	225	—	—	ns
Data delay time	t _{DD}	—	—	225	ns
Hold time of Data	t _H	10	—	—	ns
Hold time of CS, R/W, RS	t _{AH}	10	—	—	ns

